

Basement Impact Assessment

of proposed development at

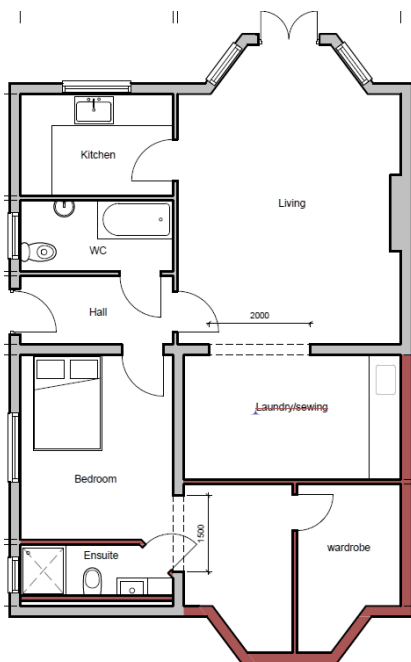
**No 27a Lambolle Road,
Camden,
London,
NW3 4HS**

for

Mr Brad Fishman

LBH4352bia Ver 2.1

October 2015



LBH
WEMBLEY



**Geotechnical &
Environmental**

Site: Basement Flat, 27 Lambolle Road, Camden, London, NW3 4HS
Client: Mr Brad Fishman

LBH4352bia
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Project No: LBH4352

Report Ref: LBH4352bia Ver 2.1

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2. Foreword-Guidance Notes

GENERAL

This report has been prepared for a specific client and to meet a specific brief. The preparation of this report may have been affected by limitations of scope, resources or time scale required by the client. Should any part of this report be relied on by a third party, that party does so wholly at its own risk and LBH WEMBLEY Geotechnical & Environmental disclaims any liability to such parties.

The observations and conclusions described in this report are based solely upon the agreed scope of work. LBH WEMBLEY Geotechnical & Environmental has not performed any observations, investigations, studies or testing not specifically set out in the agreed scope of work and cannot accept any liability for the existence of any condition, the discovery of which would require performance of services beyond the agreed scope of work.

CONTAMINATION

Unless detailed in the report, no contamination investigation has been undertaken and no consideration has been given to any special measures that may be necessary in connection with possible contamination. Unless specifically commented upon, no approach has been made to the Local Authority or Environment Agency in order to establish any further information or requirements that may affect this site. These further investigations must be made, for example, to establish whether there is a risk of gaseous or liquid migration towards or away from the site. LBH WEMBLEY Geotechnical & Environmental can accept no responsibility for any claims resulting from the presence of Asbestos, Japanese Knot-Weed, Radioactivity or Unexploded Ordnance at this site.

VALIDITY

Should the purpose for which the report is used, or the proposed use of the site change, this report may no longer be valid and any further use of or reliance upon the report in those circumstances shall be at the client's sole and own risk. The passage of time may result in changes in site conditions, regulatory or other legal provisions, technology or economic conditions which could render the report inaccurate or unreliable. The information and conclusions contained in this report should therefore not be relied upon in the future.

THIRD PARTY INFORMATION

The report may present an opinion on the disposition, configuration and composition of soils, strata and any contamination within or near the site based upon information received from third parties. However, no liability can be accepted for any inaccuracies or omissions in that information.

DRAWINGS

Any plans or drawings provided in this report are not meant to be an accurate base plan, but are used to present the general relative locations of features on, and surrounding, the site.

3. Introduction

3.1 Background

It is proposed to develop this site through the excavation of additional basement space at the existing basement level. Approximately three quarters of the building footprint is existing basement, with the remaining (northern) quarter currently unexcavated.

3.2 Brief

LBH WEMBLEY Geotechnical & Environmental have been appointed to complete a Basement Impact Assessment (BIA) for subsequent submission to London Borough of Camden in order to satisfy the specific requirements of Camden Planning Policy DP27 on Basements and Lightwells and Supplementary Planning Guidance CPG4 on Basements and Lightwells.

3.3 Planning Policy

The CPG4 Planning Guidance on Basements and Lightwells refers primarily to Planning Policy DP27 on Basements and Lightwells.

The DP27 Policy reads as follows:

In determining proposals for basement and other underground development, the Council will require an assessment of the scheme's impact on drainage, flooding, groundwater conditions and structural stability, where appropriate. The Council will only permit basement and other underground development that does not cause harm to the built and natural environment and local amenity and does not result in flooding or ground instability. We will require developers to demonstrate by methodologies appropriate to the site that schemes:

- a) maintain the structural stability of the building and neighbouring properties;*
- b) avoid adversely affecting drainage and run-off or causing other damage to the water environment;*
- c) avoid cumulative impacts upon structural stability or the water environment in the local area;*

and we will consider whether schemes:

- d) harm the amenity of neighbours;*
- e) lead to the loss of open space or trees of townscape or amenity value;*
- f) provide satisfactory landscaping, including adequate soil depth;*
- g) harm the appearance or setting of the property or the established character of the surrounding area; and*
- h) protect important archaeological remains.*

The Council will not permit basement schemes which include habitable rooms and other sensitive uses in areas prone to flooding. In determining applications for lightwells, the Council will consider whether:

- i) the architectural character of the building is protected;*
- j) the character and appearance of the surrounding area is harmed; and*
- k) the development results in the loss of more than 50% of the front garden or amenity area.*

In addition to DP27, the CPG4 Guidance on Basements and Lightwells also supports the following Local Development Framework policies:

Core Strategies:

- CS5 Managing the impact of growth and development
- CS14 Promoting high quality places and conserving our heritage
- CS15 Protecting and improving our parks and open spaces & encouraging biodiversity
- CS17 Making Camden a safer place
- CS18 Dealing with our waste and encouraging recycling

Development Policies:

- DP23 Water
- DP24 Securing high quality design
- DP25 Conserving Camden's heritage
- DP26 Managing the impact of development on occupiers and neighbours

3.4 Documents Consulted

The following documents should be read in conjunction with this report:

- October 2015 – 27a Lambolle Road, Geotechnical, hydrological and hydrogeological assessment LBH4352geo ver 1.1 prepared by LBH WEMBLEY Geotechnical & Environmental.

4. Stage 1 - Screening Assessment

4.1 Purpose and Methodology

Screening uses checklists to identify whether there are matters of concern (with regard to hydrogeology, hydrology or ground stability) which should be investigated using a BIA (Section 6.2 and Appendix E of the CGHSS) and is the process for determining whether or not a BIA is required. There are three checklists as follows:

- subterranean (groundwater) flow
- slope stability
- surface flow and flooding

4.2 Screening Checklist for Subterranean (Groundwater) Flow

Question	Response	Justification
Is the site is located directly above an aquifer?	NO	The London is classed as Unproductive Strata.
Will the proposed basement extend beneath the water table surface?	NO	No groundwater is expected within the London Clay.
Is the site within 100m of a watercourse, well (used/disused) or potential spring line?	NO	The nearest surface water feature is the River Tyburn, now culverted, that is believed to flow some 140m to the north of the site.
Will the proposed development result in a change in the area of hard-surfaced/paved areas?	NO	The basement does not extend beyond the existing building footprint.
Will more surface water (e.g. rainfall and run-off) than at present be discharged to the ground (e.g. via soakaways and/or SUDS)?	NO	There is no drainage to the ground.
Is the lowest point of the proposed excavation (allowing for any drainage and foundation space under the basement floor) close to or lower than the mean water level in any local pond?	NO	There are no nearby surface water features.

4.3 Screening Checklist for Stability

Question	Response	Justification
Does the existing site include slopes, natural or manmade, greater than 7 degrees?	NO	Albeit it is noted that the ground level steps down to the rear garden, which is approximately level with the basement floor.
Does the proposed re-profiling of landscaping at the site change slopes at the property boundary to more than 7 degrees?	NO	No re-profiling of the site is planned.
Does the development neighbour land, including railway cuttings and the like, with a slope greater than 7 degrees?	NO	The neighbouring roads, houses and gardens are approximately flat-lying.
Is the site within a wider hillside setting in which the general slope is greater than 7 degrees?	NO	No. Figure 16 of the CGHHS shows the site to be in an area of zero to seven degrees slope.
Is London Clay the shallowest strata at the site?	YES	Carried forward to scoping.
Will trees be felled as part of the proposed development and/or are works proposed within tree protection zones where trees are to be retained?	UNKNOWN	Carried forward to scoping.
Is there a history of seasonal shrink-swell subsidence in the local area, and/or evidence of such effects at the site?	YES	No evidence of cracks or building movements was evident upon visiting the site but is noted that the bay window of the adjacent property No. 25 was re-built in the early 1990s.
Is the site within 100m of a watercourse of a potential spring line?	NO	The nearest surface water feature is the River Tyburn, now culverted, that is believed to flow some 140m to the north of the site.
Is the site within an area of previously worked ground?	NO	No. Figure 2 of the CGHHS shows the site not to be in an area of worked ground.
Is the site within an aquifer?	NO	The London Clay is classified as Unproductive Strata.
Will the proposed basement extend beneath the water table such that dewatering may be required during construction?	NO	No water table is expected to be present.
Is the site within 50m of the Hampstead Heath ponds?	NO	The Hampstead Heath ponds are approximately 2.2km to the north of the site.
Is the site within 5m of a highway or pedestrian right of way?	NO	The rear edge of the pavement along Lambolle Road is greater than 5m from the front wall of No 27.
Will the proposed basement significantly increase the differential depth of foundations relative to the neighbouring properties?	YES	Carried forward to scoping.
Is the site over (or within the exclusion zone of) tunnels, e.g. railway lines?	NO	No tunnels have been identified beneath, or significantly near the site.

4.4 Screening Checklist for Surface Flow and Flooding

Question	Response	Justification
Is the site within the catchment area of the pond chains on Hampstead Heath?	NO	The site is outside of the catchment areas of the Hampstead Heath ponds as shown in Figure 14 of the CGHHS
As part of the site drainage, will surface water flows (e.g. rainfall and run-off) be materially changed from the existing route?	NO	Surface water flows will be disposed of by the existing means.
Will the proposed basement development result in a change in the proportion of hard-surfaced/paved areas?	NO	The basement does not extend beyond the existing building footprint.
Will the proposed basement result in changes to the profile of the inflows (instantaneous and long-term) of surface-water being received by adjacent properties or downstream watercourses?	NO	All drainage is to the sewer as per existing.
Will the proposed basement result in changes to the quality of surface water being received by adjacent properties or downstream watercourses?	NO	All drainage is to the sewer as per existing.
Is the site in an area known to be at risk from surface water flooding, or is it at risk from flooding, for example because the proposed basement is below the static water level of a nearby surface water feature?	YES	Lambolle Road is reported to have flooded in 1975.

5. Stage 2 - Scoping Assessment

Where the checklist is answered with a “yes” or “unknown” to any of the questions posed in the flowcharts, these matters are carried forward to the scoping stage of the BIA process.

The scoping produces a statement which defines further the matters of concern identified in the screening stage. This defining should be in terms of ground processes, in order that a site specific BIA can be designed and executed (Section 6.3 of the CGHSS).

The issues identified from the checklists as being of concern in the previous sections are as follows:

- **London Clay is the shallowest strata at the site.**
The guidance advises that of the at-surface soil strata present in LB Camden, the London Clay is the most prone to seasonal shrink-swell (subsidence and heave).
- **Trees will be felled as part of the proposed development and/or works are proposed within tree protection zones where trees are to be retained**
The guidance advises that the soil moisture deficit associated with felled tree will gradually recover. In high plasticity clay soils (such as London Clay) this will lead to gradual swelling of the ground until it reaches a new value. This may reduce the soil strength which could affect the slope stability. Additionally the binding effect of tree roots can have a beneficial effect on stability and the loss of a tree may cause loss of stability.
- **There is a history of seasonal shrink-swell subsidence in the local area, and/or evidence of such effects at the site.**
The guidance advises that there are multiple potential impacts depending on the specific setting of the basement development. For example, in terraced properties, the implications of a deepened basement/foundation system on neighbouring properties should be considered.
- **The proposed basement will significantly increase the differential depth of foundations relative to the neighbouring properties.**
The guidance advises that excavation for a basement may result in structural damage to neighbouring properties if there is a significant differential depth between adjacent foundations.
- **The site is in an area known to be at risk from surface water flooding, or is it at risk from flooding, for example because the proposed basement is below the static water level of a nearby surface water feature.**
The guidance advises that the developer should undertake a Flood Risk Assessment (FRA).

The assessment of potential impacts will need to be informed by an intrusive ground investigation and all the above issues are to be carried forward for Stage 4 impact assessment.

6. Stage 3 – Site Investigation

In September 2015 an intrusive ground investigation was undertaken comprising two small diameter windowless sampler boreholes constructed to depths of 4m and 4.6m respectively to the rear of, and in front of the property. WS2 was constructed within the front driveway whilst WS1 was constructed within the rear patio, approximately 2.5m lower than WS1. Additionally a dynamic probe to 10m depth was carried out immediately in front of the property.

Two standpipes were installed to allow for subsequent groundwater monitoring. These were monitored a week after installation and were found to be dry.

The investigation findings are presented and discussed within the accompanying geotechnical, hydrogeological & ground movement assessment report (LBH4352geo).

7. Stage 4 – Impact Assessment

The screening assessment has identified that the principal potential issues with the proposed development are associated with land stability.

7.1 Potential impact resulting from works close to existing trees

The results of plasticity index testing have confirmed the London Clay beneath the site to be of medium to high volume change potential. It is not envisaged that any trees will be removed as part of the proposed works, though this will need to be confirmed following the provision of an arboricultural assessment.

7.2 Construction methodology

It is envisaged that the existing basement is to be traditionally underpinned; following which it will be possible to construct the basement by way of forming a rigid “box-type” structure, locking into the existing basement and therefore maintaining the structural integrity of the surrounding structures.

7.3 Ground movement

In line with policy DP27, Camden Council seek to ensure that harm will not be caused to neighbouring properties by basement development.

A key factor in the design of the new basement construction will be the need to preserve the stability of the adjacent buildings and highway at all times, both during excavation and construction and in the permanent situation.

It is readily concluded that there will be no significant risk to the integrity of the adjacent highway or to the services that have been identified as lying beneath Lambolle Road, but there is clearly a risk to the neighbouring building, No. 25 Lambolle Road.

The party wall between Nos. 27 and 25 is already at the depth of the proposed basement along the rear half of its length, thus only the front half requires deepening. It is assumed that, as shown on the appended drawing from Camden planning application 9100082, (24/01/1991) that the remainder of this party wall founds at the same depth as the front wall of the house, approximately within 1m of the surface. This being the case, deepening of this footing by some 2m by conventional underpinning is anticipated.

It is not possible to model the vertical and horizontal soil movements that may result from underpinning. Experience indicates that potential movements are very much dependent on workmanship. There will inevitably be a limited extent of settlement of the underpinned wall; but, assuming good workmanship, this vertical settlement can be expected to be less than 5mm.

There is some limited scope for basement heave to occur as a result of the stress relief due overburden removal. This upwards movement may serve to counteract the underpinning settlement described above. However, while some heave movement should be expected in the short term, the weight of the new building foundation will counteract long term heave movements.

There may be a need to include provision of heave protection beneath the floor in order to protect the floor against possible long term residual heave of the underlying clay.

CPG4 guidance recognises that residential properties are particularly sensitive to damage, as relatively minor internal damage to a person's home can incur cost and considerable inconvenience to repair and redecorate and the Council expect mitigation measures to be employed where a risk of damage to residential buildings is identified of Burland Category 1 'very slight' or higher.

Within the area of the proposed basement, excavation will extend to approximately 3m below existing ground level but in view of the relatively small area involved, long term vertical ground heave associated with stress relief is not expected to be substantial.

7.4 Monitoring and Contingency Plan

The monitoring plan is to be sufficiently robust to enable mitigation to be effectively implemented in the event of agreed trigger values for vertical and horizontal movement being exceeded at agreed monitoring positions. During the actual basement excavation stage both start of shift and end of shift measurements will be necessary in order for movements to be checked and, in the event of any adverse movement, for the contingency plan to be effected sufficiently quickly to prevent the excessive movement to either the neighbouring properties.

The plan will make it clear what emergency measures or mitigation may be required to be implemented in the event of an exceedance and will demonstrate the availability of the required resources. The plan will also identify exactly who will have the responsibility for implementing the plan.

7.5 Residual Impacts

Given the mitigation measures afforded by the construction methodology that has been described, it is concluded that the proposed basement development will have no unacceptable residual impacts upon the surrounding structures, infrastructure and environment. Given that no groundwater was encountered within or below the proposed excavation depths and given the essentially impermeable nature of the soils that the new basement will be replacing, no cumulative impacts are envisaged.

Given an adequate design and construction methodology it is envisaged that the basement construction will have no detrimental impact on the stability of either the host building or the neighbouring structures.

8. Further Information Required

The following information will be required to reinforce and complete the necessary assessments and modelling and this assessment should be reviewed and updated in due course.

- Flood Risk Assessment
- Arboricultural Assessment
- Construction Methodology
- Drawings & Sections of existing foundations
- Drawings & Sections of proposed scheme

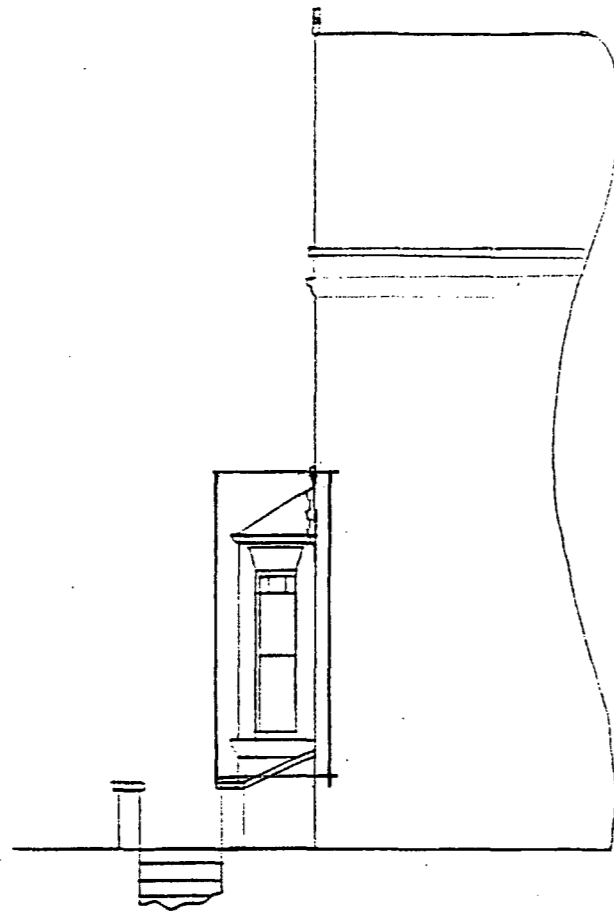
APPENDIX

DRAWING SHOWING ADJACENT PROPERTY BAY WINDOW FOUNDATIONS

TP 9100082
9160008

LONDON BOROUGH OF CAMDEN
PLANNING AND TRANSPORT
DEPARTMENT
24 JAN 1991
RECEIVED

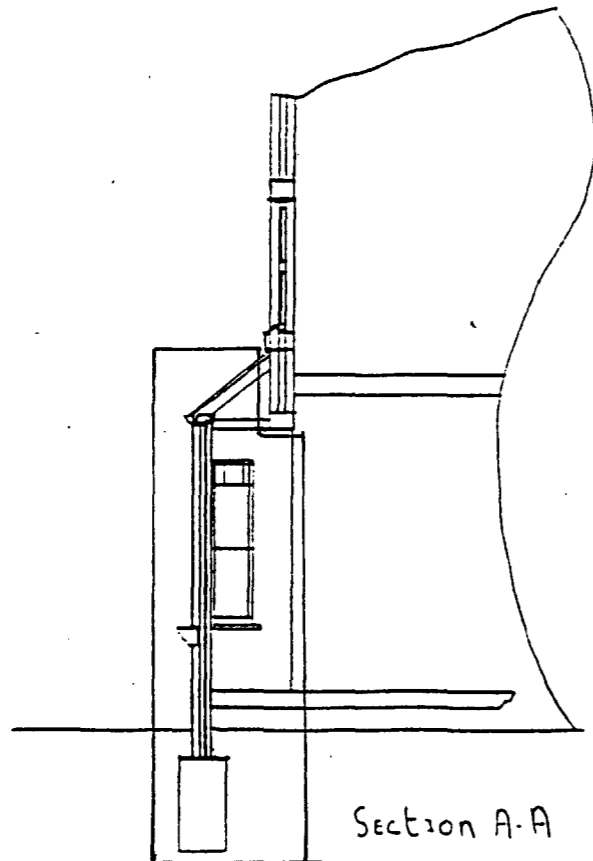
LONDON BOROUGH OF CAMDEN
TOWN AND COUNTRY PLANNING ACTS
18 JUN 1991
APPROVED
~~PLANS NOT APPROVED~~
ON BEHALF OF THE COUNCIL



Side Elevation

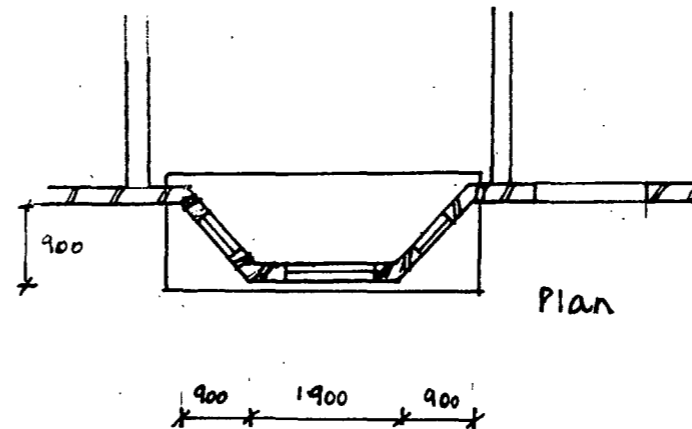


Front Elevation



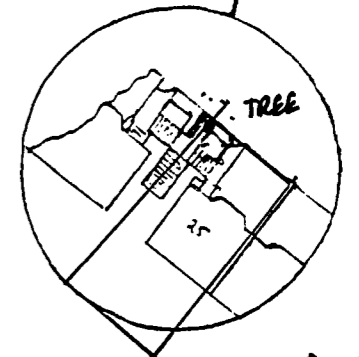
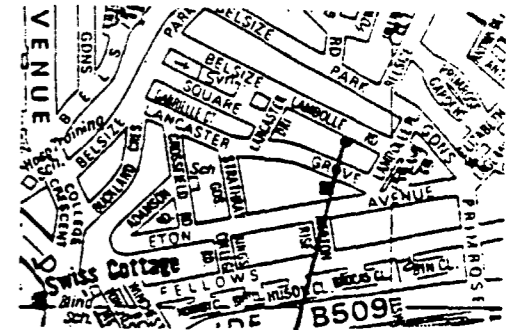
Section A-A

- 1. ALL WORKS TO BE IN ACCORDANCE WITH LOCAL AUTHORITY REQUIREMENTS AND DISTRICT SURVEYOR REQUIREMENTS.
- 2. DEMOLITION WORKS TO BE CAREFULLY EXECUTED AND ALL EXISTING MATERIALS TO BE RECLAIMED AND SALVAGED WHEREVER POSSIBLE FOR REUSE.
- 3. ALL NEW MATERIALS SHALL MATCH THE EXISTING.



Plan

STEPS TO GARDEN FLAT 15A



DWG. 01

BULTA
25 Lambolle Road
Repair of Bay Window
Scale 1:100